# Future Plans for Photocathode Studies

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# Burle System

- Continue to refine the recipe for large area photocathode

  - finalize the RF plasma setup

  - test the thickness uniformity after place the Sb beads further apart.

  - investigate the affect of plasma cleaning and oxidation

  - test additional cathode properties

    Aging

    Dark Current

- Study variation of QE verse Sb thickness

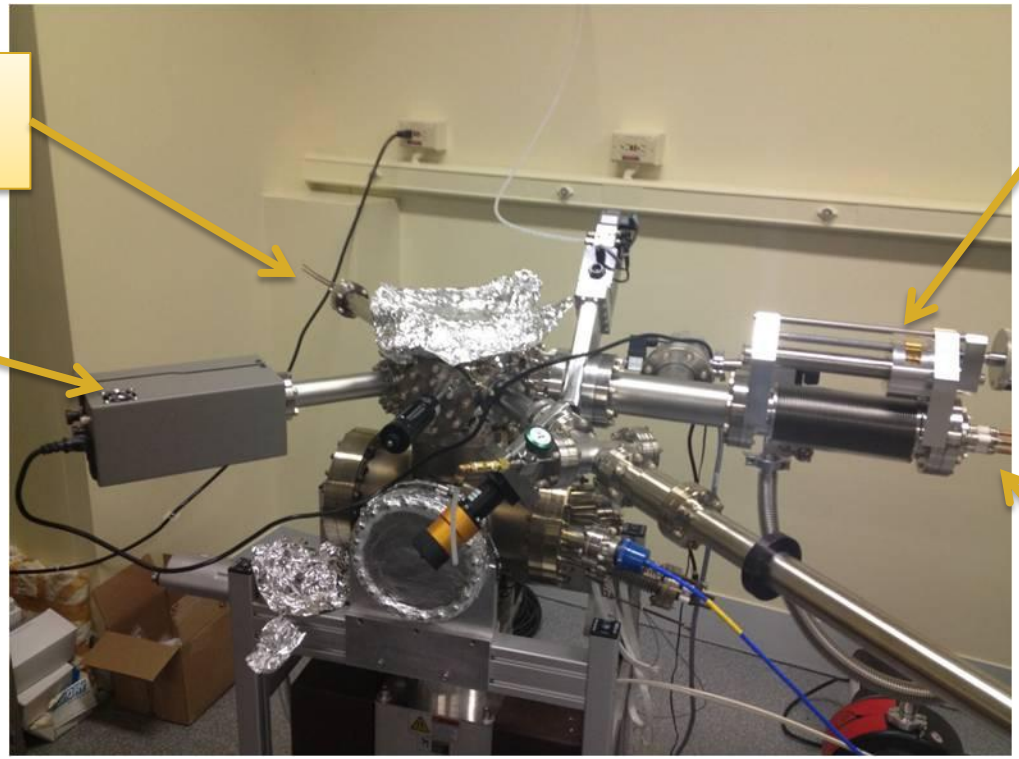
  - use 1 Sb bead deposition to obtain a variety of Sb thicknesses

  - complete absolute reflection measurement of Sb films and relate to the film transmission data. --- Calibration

  - use elliposometry measurement to obtain absolute thickness of Sb film, relate the transmission/reflection data with Sb film.

# UHV-System
## - Current Status

- Retractable arm was installed
- RGA was installed
- Quartz crystal microbalance was installed.



# UHV-System
## - Future plans

- Complete necessary instrumentation for the UHV system.
  - water cooler for the quartz crystal microbalance
  - IR camera for the source temperature measurement
- Study the evaporation process for Sb bead and K, Cs dispensers.
  - Evaporation temperature of the sources
  - Gas species during evaporation
  - Sb film growth rate
  - Compare the Sb thickness values from QCM with the values from UV-Vis measurement
- Study the cathode growth recipe step by step
  - Sb film growth rate
  - Sb film resistivity change, phase transition
  - In-situ monitor the film property (optical and electrical) as the K and Cs deposited
  - Transfer the knowledge to burle equipment for recipe refinement.

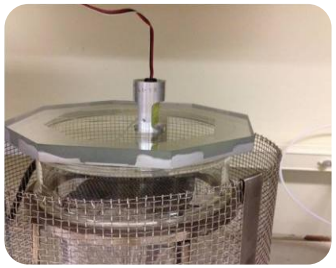
# Instrumentation (Henry suggested)

- Can we record important parameter time to time?

  Parameters need to be recorded:
  - Temperature
  - Pressure
  - Source bias-voltage and current
  - RGA species
  - Reflectivity during Sb deposition
  - Photo-current during K and Cs deposition
  - Other parameters?...

# Instrumentation (Henry suggested)

Reflectivity during Sb deposition



Temperature, pressure

Photo- current during K and Cs deposition


Central computer

RGA


Detector head is too far away from sources

Bias-voltage and current

Blue color, program available, can be recorded

Red color, no program, need electronic integration